Title: Scene consistency effect of object recognition in peripheral vision

Presenting Author: Kazuhiko Yokosawa

Author(s): Kazuhiko Yokosawa, The University of Tokyo, Yutaka Shimane, The University of Tokyo, Ryosuke Niimi, Niigata University

Abstract: 2.42

The effect that a background scene matched with an object facilitates object recognition is known as "scene consistency effect." Contextual information in the background scene is extracted as a gist that includes holistic features of the scene. Previous studies have demonstrated gist extraction in peripheral vision, although it is unknown whether the scene consistency effect also occurs in peripheral vision. We used the dual task method and developed a situation in which participants focused attention on a central task that was irrelevant to scene stimuli presented at the periphery, and examined how the absence of attention influenced the scene consistency effect. In Experiment 1, a visual search array consisting of letters were presented at the fixation point, and a scene stimulus consisting of an object embedded in a background scene was briefly shown at the periphery. Participants were asked to simultaneously perform a central visual search task and an object detection task. Results indicated that objects shown with a consistent background scene were detected better than objects shown with an inconsistent background, suggesting that the scene consistency effect occurs even in peripheral vision. Moreover, the central visual search performance was comparable with or without the peripheral object detection task (i.e., a single task), which confirmed the central fixation. Gray-scaled scene stimuli were used in Experiment 2, which was otherwise identical to Experiment 1 to examine the contribution of the scene color on the scene consistency effect. The results of Experiment 2 also showed a significant scene consistency effect, which indicated that the color did not contribute to this effect. It is suggested that properties of backgrounds other than the color might affect the scene consistency effect in peripheral vision.